

ETSI TS 136 300 V8.6.0 (2008-10)

Technical Specification

**Universal Mobile Telecommunications System (UMTS)
Evolved Universal Terrestrial Radio Access (E-UTRA) and
Evolved Universal Terrestrial
Radio Access Network (E-UTRAN);
Overall description;
Stage 2
(3GPP TS 36.300 version 8.6.0 Release 8)**



iTeh STANDARD PREVIEW
(standards.iteh.ai)

Full standard:
<https://standards.iteh.ai/catalog/standards/sist/a808f735-dadf-43cc-ac8e-146266953d62/etsi-ts-136-300-v8.6.0-2008-10>



Reference

RTS/TSGR-0236300v860

Keywords

UMTS**ETSI**

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

Important notice

Individual copies of the present document can be downloaded from:

<http://www.etsi.org>

The present document may be made available in more than one electronic version or in print. In any case of existing or perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF). In case of dispute, the reference shall be the printing on ETSI printers of the PDF version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other ETSI documents is available at

<http://portal.etsi.org/tb/status/status.asp>

If you find errors in the present document, please send your comment to one of the following services:

http://portal.etsi.org/chaicor/ETSI_support.asp

Copyright Notification

No part may be reproduced except as authorized by written permission.
The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2008.
All rights reserved.

DECT™, PLUGTESTS™, UMTS™, TIPHON™, the TIPHON logo and the ETSI logo are Trade Marks of ETSI registered for the benefit of its Members.

3GPP™ is a Trade Mark of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: "*Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards*", which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<http://webapp.etsi.org/IPR/home.asp>).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Foreword

This Technical Specification (TS) has been produced by ETSI 3rd Generation Partnership Project (3GPP).

The present document may refer to technical specifications or reports using their 3GPP identities, UMTS identities or GSM identities. These should be interpreted as being references to the corresponding ETSI deliverables.

The cross reference between GSM, UMTS, 3GPP and ETSI identities can be found under <http://webapp.etsi.org/key/queryform.asp>.

ITeH STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
<https://standards.iteh.ai/catalog/standards/sist/a808735-dadf-43cc-ac8e-146266953d62/etsi-ts-136-300-v8.6.0-2008-10>

Contents

Intellectual Property Rights	2
Foreword.....	2
Foreword.....	10
1 Scope	11
2 References	11
3 Definitions, symbols and abbreviations	12
3.1 Definitions	12
3.2 Abbreviations	12
4 Overall architecture	14
4.1 Functional Split	15
4.2 Interfaces	17
4.2.1 S1 Interface	17
4.2.2 X2 Interface	17
4.3 Radio Protocol architecture	17
4.3.1 User plane	17
4.3.2 Control plane	18
4.4 Synchronization.....	19
4.5 IP fragmentation.....	19
5 Physical Layer for E-UTRA.....	19
5.1 Downlink Transmission Scheme.....	21
5.1.1 Basic transmission scheme based on OFDM	21
5.1.2 Physical-layer processing	21
5.1.3 Physical downlink control channel	22
5.1.4 Downlink Reference signal.....	22
5.1.5 Downlink multi-antenna transmission.....	22
5.1.6 MBSFN transmission.....	23
5.1.7 Physical layer procedure.....	23
5.1.7.1 Link adaptation	23
5.1.7.2 Power Control	23
5.1.7.3 Cell search.....	23
5.1.8 Physical layer measurements definition.....	23
5.2 Uplink Transmission Scheme.....	23
5.2.1 Basic transmission scheme	23
5.2.2 Physical-layer processing	24
5.2.3 Physical uplink control channel.....	24
5.2.4 Uplink Reference signal.....	25
5.2.5 Random access preamble	25
5.2.6 Uplink multi-antenna transmission	25
5.2.7 Physical channel procedure.....	25
5.2.7.1 Link adaptation	25
5.2.7.2 Uplink Power control	25
5.2.7.3 Uplink timing control.....	25
5.3 Transport Channels.....	26
5.3.1 Mapping between transport channels and physical channels.....	27
5.4 E-UTRA physical layer model	27
5.4.1 Void	27
5.4.2 Void	27
6 Layer 2.....	27
6.1 MAC Sublayer.....	29
6.1.1 Services and Functions	29
6.1.2 Logical Channels	29
6.1.2.1 Control Channels	30

6.1.2.2	Traffic Channels.....	30
6.1.3	Mapping between logical channels and transport channels	30
6.1.3.1	Mapping in Uplink	30
6.1.3.2	Mapping in Downlink	31
6.2	RLC Sublayer.....	32
6.2.1	Services and Functions	32
6.2.2	PDU Structure.....	32
6.3	PDCP Sublayer.....	33
6.3.1	Services and Functions	33
6.3.2	PDU Structure.....	33
6.4	Void.....	34
7	RRC.....	34
7.1	Services and Functions	34
7.2	RRC protocol states & state transitions	34
7.3	Transport of NAS messages	35
7.4	System Information	35
7.5	Void.....	36
8	E-UTRAN identities.....	36
8.1	E-UTRAN related UE identities.....	36
8.2	Network entity related Identities	36
9	ARQ and HARQ	37
9.1	HARQ principles.....	37
9.2	ARQ principles.....	38
9.3	HARQ/ARQ interactions	39
10	Mobility.....	39
10.1	Intra E-UTRAN.....	39
10.1.1	Mobility Management in ECM-IDLE.....	39
10.1.1.1	Cell selection.....	39
10.1.1.2	Cell reselection.....	40
10.1.1.3	Void.....	41
10.1.1.4	Void.....	41
10.1.1.5	Void.....	41
10.1.2	Mobility Management in ECM-CONNECTED.....	41
10.1.2.1	Handover	41
10.1.2.1.1	C-plane handling	42
10.1.2.1.2	U-plane handling	45
10.1.2.2	Path Switch	46
10.1.2.3	Data forwarding	46
10.1.2.3.1	For RLC-AM bearers	46
10.1.2.3.2	For RLC-UM bearers	47
10.1.2.3.3	SRB handling	47
10.1.2.4	Void.....	47
10.1.2.5	Void.....	47
10.1.2.6	Void.....	47
10.1.2.7	Timing Advance.....	47
10.1.3	Measurements	47
10.1.3.1	Intra-frequency neighbour (cell) measurements.....	49
10.1.3.2	Inter-frequency neighbour (cell) measurements.....	49
10.1.4	Paging and C-plane establishment	49
10.1.5	Random Access Procedure	49
10.1.5.1	Contention based random access procedure.....	50
10.1.5.2	Non-contention based random access procedure	51
10.1.5.3	Interaction model between L1 and L2/3 for Random Access Procedure	52
10.1.6	Radio Link Failure	52
10.1.7	Radio Access Network Sharing	54
10.1.8	Handling of Roaming and Area Restrictions for UEs in ECM-CONNECTED.....	54
10.2	Inter RAT	54
10.2.1	Cell reselection	54
10.2.2	Handover	55

10.2.2a	Inter-RAT cell change order to GERAN with NACC	55
10.2.2b	Inter-RAT handovers from E-UTRAN	56
10.2.2b.1	Data forwarding	56
10.2.2b.1.1	For RLC-AM bearers	56
10.2.2b.1.2	For RLC-UM bearers	56
10.2.3	Measurements	56
10.2.3.1	Inter-RAT handovers from E-UTRAN	56
10.2.3.2	Inter-RAT handovers to E-UTRAN	56
10.2.3.3	Inter-RAT cell reselection from E-UTRAN	57
10.2.3.4	Limiting measurement load at UE	57
10.2.4	Network Aspects	57
10.3	Mobility between E-UTRAN and Non-3GPP radio technologies	57
10.3.1	UE Capability Configuration	57
10.3.2	Mobility between E-UTRAN and cdma2000 network	57
10.3.2.1	Tunnelling of cdma2000 Messages over E-UTRAN between UE and cdma2000 Access Nodes	58
10.3.2.2	Mobility between E-UTRAN and HRPD	59
10.3.2.2.1	Mobility from E-UTRAN to HRPD	59
10.3.2.2.1.1	HRPD System Information Transmission in E-UTRAN	59
10.3.2.2.1.2	Measuring HRPD from E-UTRAN	59
10.3.2.2.1.2.1	Idle Mode Measurement Control	59
10.3.2.2.1.2.2	Active Mode Measurement Control	59
10.3.2.2.1.2.3	Active Mode Measurement	59
10.3.2.2.1.3	Pre-registration to HRPD Procedure	59
10.3.2.2.1.4	E-UTRAN to HRPD Cell Re-selection	60
10.3.2.2.1.5	E-UTRAN to HRPD Handover	60
10.3.2.2.2	Mobility from HRPD to E-UTRAN	60
10.3.2.3	Mobility between E-UTRAN and cdma2000 1xRTT	60
10.3.2.3.1	Mobility from E-UTRAN to cdma2000 1xRTT	60
10.3.2.3.1.1	cdma2000 1xRTT System Information Transmission in E-UTRAN	60
10.3.2.3.1.2	Measuring cdma2000 1xRTT from E-UTRAN	60
10.3.2.3.1.2.1	Idle Mode Measurement Control	60
10.3.2.3.1.2.2	Active Mode Measurement Control	61
10.3.2.3.1.2.3	Active Mode Measurement	61
10.3.2.3.1.3	E-UTRAN to cdma2000 1xRTT Cell Re-selection	61
10.3.2.3.1.4	E-UTRAN to cdma2000 1xRTT Handover	61
10.3.2.3.2	Mobility from cdma2000 1xRTT to E-UTRAN	61
10.4	Area Restrictions	61
10.5	Mobility to and from CSG cells	62
10.5.0	Principles for idle-mode mobility with CSG cells	62
10.5.0.1	Intra-frequency mobility	62
10.5.0.2	Inter-frequency mobility	62
10.5.1	Inbound mobility to CSG cells	62
10.5.1.1	RRC_IDLE	62
10.5.1.2	RRC_CONNECTED	62
10.5.2	Outbound mobility from CSG cells	63
10.5.2.1	RRC_IDLE	63
10.5.2.2	RRC_CONNECTED	63
11	Scheduling and Rate Control	63
11.1	Basic Scheduler Operation	63
11.1.1	Downlink Scheduling	63
11.1.2	Uplink Scheduling	63
11.2	Void	64
11.3	Measurements to Support Scheduler Operation	64
11.4	Rate Control of GBR and AMBR	64
11.4.1	Downlink	64
11.4.2	Uplink	64
11.5	CQI reporting for Scheduling	65
12	DRX in RRC_CONNECTED	65
13	QoS	66
13.1	Bearer service architecture	67

13.2	QoS parameters	67
14	Security.....	68
14.1	Overview and Principles	68
14.2	Security termination points.....	70
14.3	State Transitions and Mobility	70
14.3.1	RRC_IDLE to RRC_CONNECTED	70
14.3.2	RRC_CONNECTED to RRC_IDLE	70
14.3.3	Intra E-UTRAN Mobility	70
14.4	AS Key Change in RRC_CONNECTED	71
14.5	Security Interworking.....	71
15	MBMS.....	71
15.1	General	72
15.1.1	E-MBMS Logical Architecture.....	72
15.1.2	E-MBMS User Plane Protocol Architecture.....	74
15.2	MBMS Cells.....	74
15.2.1	MBMS-dedicated cell.....	74
15.2.2	MBMS/Unicast-mixed cell	74
15.3	MBMS Transmission.....	75
15.3.1	General.....	75
15.3.2	Single-cell transmission.....	75
15.3.3	Multi-cell transmission	75
15.3.4	MBMS Reception States.....	76
15.3.5	MCCH Structure.....	76
15.4	Service Continuity.....	77
15.5	Network sharing	77
15.6	Network Functions for Support of Multiplexing	77
15.7	Procedures	78
15.7.1	Procedures for Broadcast mode	78
15.7.1.1	Session Start procedure	78
15.7.1.2	Session Stop procedure	79
16	Radio Resource Management aspects	79
16.1	RRM functions	79
16.1.1	Radio Bearer Control (RBC)	79
16.1.2	Radio Admission Control (RAC)	80
16.1.3	Connection Mobility Control (CMC)	80
16.1.4	Dynamic Resource Allocation (DRA) - Packet Scheduling (PS)	80
16.1.5	Inter-cell Interference Coordination (ICIC).....	80
16.1.6	Load Balancing (LB)	80
16.1.7	Inter-RAT Radio Resource Management	81
16.1.8	Subscriber Profile ID for RAT/Frequency Priority.....	81
16.2	RRM architecture	81
16.2.1	Centralised Handling of certain RRM Functions.....	81
16.2.2	De-Centralised RRM	81
16.2.3	Load balancing control	81
17	RF aspects	81
17.1	Spectrum deployments	81
18	UE capabilities	81
19	S1 Interface	81
19.1	S1 User plane	81
19.2	S1 Control Plane.....	82
19.2.1	S1 Interface Functions	83
19.2.1.1	S1 Paging function	83
19.2.1.2	S1 UE Context Management function.....	83
19.2.1.3	Initial Context Setup Function	83
19.2.1.3a	UE Context Modification Function.....	84
19.2.1.4	Mobility Functions for UEs in ECM-CONNECTED	84
19.2.1.4.1	Intra-LTE Handover	84
19.2.1.4.2	Inter-3GPP-RAT Handover	84

19.2.1.5	EPS Bearer Service Management function	84
19.2.1.6	NAS Signalling Transport function.....	84
19.2.1.7	NAS Node Selection Function	84
19.2.1.8	S1-interface management functions	84
19.2.1.9	MME Load balancing Function	84
19.2.1.10	Location Reporting Function	85
19.2.1.11	Warning Message Transmission function.....	85
19.2.1.12	Overload Function.....	85
19.2.2	S1 Interface Signalling Procedures.....	85
19.2.2.1	Paging procedure.....	86
19.2.2.2	S1 UE Context Release procedure	86
19.2.2.2.1	S1 UE Context Release (EPC triggered)	87
19.2.2.2.2	S1 UE Context Release Request (eNB triggered).....	87
19.2.2.3	Initial Context Setup procedure.....	87
19.2.2.3a	UE Context Modification procedure	88
19.2.2.4	EPS Bearer signalling procedures	89
19.2.2.4.1	EPS Bearer Setup procedure.....	89
19.2.2.4.2	EPS Bearer Modification procedure	90
19.2.2.4.3	EPS Bearer Release procedure (MME initiated)	90
19.2.2.4.4	EPS Bearer Release procedure (eNB initiated)	91
19.2.2.5	Handover signalling procedures	91
19.2.2.5.1	Handover Preparation procedure	92
19.2.2.5.2	Handover Resource Allocation procedure.....	92
19.2.2.5.3	Handover Notification procedure	93
19.2.2.5.4	Handover Cancellation	93
19.2.2.5.5	Path Switch procedure	94
19.2.2.6	NAS transport procedures	94
19.2.2.7	S1 interface Management procedures	96
19.2.2.7.1	Reset procedure	96
19.2.2.7.1a	eNB initiated Reset procedure.....	96
19.2.2.7.1b	MME initiated Reset procedure.....	96
19.2.2.7.2	Error Indication functions and procedures.....	97
19.2.2.7.2a	eNB initiated error indication	97
19.2.2.7.2b	MME initiated error indication	97
19.2.2.8	S1 Setup procedure	98
19.2.2.9	eNB Configuration Update procedure.....	98
19.2.2.10	MME Configuration Update procedure	99
19.2.2.11	Location Reporting procedures	99
19.2.2.11.1	Location Reporting Control procedure.....	100
19.2.2.11.2	Location Report procedure	100
19.2.2.11.3	Location Report Failure Indication procedure.....	100
19.2.2.12	Overload procedure.....	101
19.2.2.12.1	Overload Start procedure.....	101
19.2.2.12.2	Overload Stop procedure	101
19.2.2.13	Write-Replace Warning procedure.....	101
20	X2 Interface.....	102
20.1	User Plane	102
20.2	Control Plane.....	102
20.2.1	X2-CP Functions	103
20.2.2	X2-CP Procedures	103
20.2.2.1	Handover Preparation procedure.....	104
20.2.2.2	Handover Cancellation procedure	105
20.2.3	Inter-cell Load Management.....	105
21	System and Terminal complexity.....	106
21.1	Overall System complexity	106
21.2	Physical layer complexity	106
21.3	UE complexity.....	106
22	Support for self-configuration and self-optimisation	106
22.1	Definitions	106
22.2	UE Support for self-configuration and self-optimisation	107

22.3	Self-configuration.....	107
22.3.1	Dynamic configuration of the S1-MME interface	107
22.3.1.1	Prerequisites	107
22.3.1.2	SCTP initialization	108
22.3.1.3	Application layer initialization.....	108
22.3.2	Dynamic Configuration of the X2 interface	108
22.3.2.1	Prerequisites	108
22.3.2.2	SCTP initialization	108
22.3.2.3	Application layer initialization.....	108
22.3.3	Intra-LTE/frequency Automatic Neighbour Relation Function	108
22.3.4	Inter-RAT/Inter-frequency Automatic Neighbour Relation Function	110
23	Others	111
23.1	Support for real time IMS services.....	111
23.2	Subscriber and equipment trace.....	111
Annex A (informative): NAS Overview		112
A.1	Services and Functions.....	112
A.2	NAS protocol states & state transitions.....	112
Annex B (informative): MAC and RRC Control		113
B.1	Difference between MAC and RRC control	113
B.2	Classification of MAC and RRC control functions.....	113
Annex C (informative): System Information		114
C.1	SI classification	114
C.1.1	Information valid across multiple cells	114
C.1.2	Information needed at cell/PLMN search.....	114
C.1.3	Information needed prior to cell camping	115
C.1.4	Information needed prior to cell access.....	115
C.1.5	Information needed while camping on a cell.....	116
C.1.6	Thoughts about category division.....	117
C.2	Division of SI between static and flexible parts	117
C.2.1	Static part.....	117
C.2.2	Flexible part.....	118
C.2.3	Information whose location is FFS.....	119
C.2.4	Dedicated part	119
Annex D (informative): MBMS		120
D.1	MBMS control & functions.....	120
D.2	MBMS transmission.....	120
D.3	Deployment Scenarios.....	121
D.4	MCCH Information	122
Annex E (informative): Drivers for Mobility Control		124
E.1	Drivers.....	124
E.1.1	Best radio condition	125
E.1.2	Camp load balancing	125
E.1.3	Traffic load balancing.....	125
E.1.4	UE capability	125
E.1.5	Hierarchical cell structures	125
E.1.6	Network sharing.....	126
E.1.7	Private networks/home cells	126
E.1.8	Subscription based mobility control	126
E.1.9	Service based mobility control.....	126
E.1.10	MBMS	126
E.2	Limitations for mobility control	126
E.2.1	UE battery saving	126
E.2.2	Network signalling/processing load.....	127

E.2.3	U-plane interruption and data loss	127
E.2.4	OAM complexity	127
E.3	Inter-frequency/RAT drivers	127
E.3.1	Mobility control during IDLE mode	127
E.3.2	Mobility control upon IDLE to ACTIVE transition	128
E.3.3	Mobility control during ACTIVE mode	129
E.3.4	Mobility control upon ACTIVE to IDLE transition	129
Annex F (informative):	Mobility and Access Control Requirements associated with Closed Subscriber Group (CSG) Cells	131
F.1	Access Control	131
F.2	Mobility	131
F.3	Mobility performance guidelines	133
Annex G (informative):	Guideline for E-UTRAN UE capabilities.....	134
Annex H (informative):	PDCCH, PHICH and PUCCH Performance	136
Annex I (informative):	Change history	137
History		140

iTeh STANDARD PREVIEW
 (standards.iteh.ai)
 Full standard:
<https://standards.iteh.ai/catalog/standards/sist/a808f735-dadf-43cc-ac8e-146266953d62/etsi-ts-136-300-v8.6.0-2008-10>

Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
 - 1 presented to TSG for information;
 - 2 presented to TSG for approval;
 - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
<https://standards.iteh.ai/catalog/standards/sist/ac8f735-dadf-43cc-ac8e-146266953d62/etsi-ts-136-300-v8.6.0-2008-10>

1 Scope

The present document provides an overview and overall description of the E-UTRAN radio interface protocol architecture. Details of the radio interface protocols will be specified in companion specifications of the 36 series.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

- [1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications"
- [2] 3GPP TR 25.913: "Requirements for Evolved UTRA (E-UTRA) and Evolved UTRAN (E-UTRAN)"
- [3] 3GPP TS 36.201: "Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer; General description".
- [4] 3GPP TS 36.211: "Evolved Universal Terrestrial Radio Access (E-UTRA); Physical Channels and Modulation "
- [5] 3GPP TS 36.212: "Evolved Universal Terrestrial Radio Access (E-UTRA); Multiplexing and channel coding"
- [6] 3GPP TS 36.213: "Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer procedures"
- [7] 3GPP TS 36.214: "Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer; Measurements"
- [8] IETF RFC 2960 (10/2000): "Stream Control Transmission Protocol"
- [9] 3GPP TS 36.302: "Evolved Universal Terrestrial Radio Access (E-UTRA); Services provided by the physical layer"
- [11] 3GPP TS 36.304: "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) procedures in idle mode"
- [12] 3GPP TS 36.306: "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio access capabilities"
- [13] 3GPP TS 36.321: "Evolved Universal Terrestrial Radio Access (E-UTRA); Medium Access Control (MAC) protocol specification"
- [14] 3GPP TS 36.322: "Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Link Control (RLC) protocol specification"
- [15] 3GPP TS 36.323: "Evolved Universal Terrestrial Radio Access (E-UTRA); Packet Data Convergence Protocol (PDCP) specification"
- [16] 3GPP TS 36.331: "Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC) protocol specification".
- [17] 3GPP TS 23.401: "Technical Specification Group Services and System Aspects; GPRS enhancements for E-UTRAN access".

- [18] 3GPP TR 24.801: "3GPP System Architecture Evolution (SAE); CT WG1 aspects".
- [19] 3GPP TS 23.402: "3GPP System Architecture Evolution: Architecture Enhancements for non-3GPP accesses".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply.

Carrier frequency: center frequency of the cell.

MBMS-dedicated cell: cell dedicated to MBMS transmission.

Frequency layer: set of cells with the same carrier frequency.

Handover: procedure that changes the serving cell of a UE in RRC_CONNECTED.

Unicast/MBMS-mixed cell: cell supporting both unicast and MBMS transmissions.

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in TR 21.905 [1].

ACK	Acknowledgement
ACLR	Adjacent Channel Leakage Ratio
AM	Acknowledge Mode
AMBR	Aggregate Maximum Bit Rate
ARQ	Automatic Repeat Request
AS	Access Stratum
BCCH	Broadcast Control Channel
BCH	Broadcast Channel
BSR	Buffer Status Reports
C/I	Carrier-to-Interference Power Ratio
CAZAC	Constant Amplitude Zero Auto-Correlation
CMC	Connection Mobility Control
CP	Cyclic Prefix
C-plane	Control Plane
C-RNTI	Cell RNTI
CQI	Channel Quality Indicator
CRC	Cyclic Redundancy Check
CSG	Closed Subscriber Group
DCCH	Dedicated Control Channel
DL	Downlink
DFTS	DFT Spread OFDM
DRB	Data Radio Bearer
DRX	Discontinuous Reception
DTCH	Dedicated Traffic Channel
DTX	Discontinuous Transmission
DwPTS	Downlink Pilot Time Slot
ECM	EPS Connection Management
EMM	EPS Mobility Management
eNB	E-UTRAN NodeB
EPC	Evolved Packet Core
EPS	Evolved Packet System
E-UTRA	Evolved UTRA